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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/085,528

.02/25/2002

Mark W. Lambert

31008.P037

9800

26181 7590 01/15/2008

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EXAMINER

RODRIGUEZ, PAUL L

ART UNIT

PAPER NUMBER

2123

MAIL DATE

DELIVERY MODE

01/15/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/085,528

Applicant(s)

LAMBERT ET AL.

Examiner

Ayal I. Sharon

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-13 and 15-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-13 and 15-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Introduction

1. Claims 1-9, 11-13, and 15-39 of U.S. Application 10/085,528 are currently pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
4. The prior art used for these rejections is as follows:

- a. The Feb.3, 2001 version of the official corporate website of D-cubed, Ltd. of Cambridge, England, reads upon the claimed invention as stored in the "Internet Wayback Machine".

(<http://web.archive.org/web/20010201070800/http://www.d-cubed.co.uk>)

D-cubed, Ltd. is the developer of the 2D Dimensional Constraint Manager product. (Referred to as **"the D-cubed reference"**).
 - b. D-Cubed, Ltd. The 2D DCM Manual, Version 4.2. January 2002. (**"2D DCM Manual"**).
 - c. KeyCAD Complete For Windows™ © 1994. pp.1-14, 9-6 to 9-8, A-11 to A-1 to A-14, and I-3. (**"KeyCAD"**).
5. The claim rejections are hereby summarized for Applicant's convenience. The detailed rejections follow.
6. **Claim 1-9, 11-13, and 15-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over the D-cubed reference in view of 2D DCM Manual and further in view of KeyCAD.**
7. In regards to Claim 1, the D-cubed reference teaches the following limitations:
1. *(Currently amended) A method comprising:*

.....

receiving an indication of modification to the CAD geometry piece;

automatically modifying the CAD geometry piece and its boundary based at least upon the received indication; and

.....

automatically modifying at least one of the pattern or the plurality of features to be continuously included within the boundary of the modified CAD geometry piece, based at least upon the modified CAD geometry piece and the received input.

The section of the D-cubed reference titled "What is variational design?" on the page titled "The 2D and 3D Dimensional Constraint Managers: Overview" teaches the following (emphasis added):

In brief, variational techniques enable the end-user to specify and control their geometric models through the use of simple rules. Such rules frequently include dimensions and constraints. Dimensions, such as distances, angles and radii, have an easily understood interpretation. The meaning of constraints is less obvious. In fact they are simply rules that restrict, i.e. constrain, the behavior of the geometries in the model. Examples of constraints include parallelism, tangency and concentricity.

To modify a model, the end-user simply specifies a change to the rules, such as a modified value for a dimension. The DCM then automatically re-calculates the locations of all the geometries affected by the new dimension value, whilst ensuring that their final locations are consistent with the previously applied dimensions and constraints. The end-user does not have to re-position the geometries manually to create the new configuration, hence their productivity is greatly enhanced.

Examiner finds that the claimed "boundary" is one of the "constraints" taught in the section recited above, because the contents within the boundary must remain within the boundary when the boundary is changed. Since requiring the contents to remain within the boundary is a rule that restricts, *i.e. constrains*, the behavior of the geometries in the model, it is a constraint as defined by the D-cubed reference.

The D-cubed reference, while teaching the following limitation, does not teach it in great detail:

automatically modifying the CAD geometry piece and its boundary based at least upon the received indication; and

2D DCM Manual, on the other hand, expressly teaches: (1) how a pattern constraint may be used in models containing groups of geometries repeated in a regular manner (see Section 4.2.11 "Pattern Constraints"), (2) the best way to add constraints onto groups of patterned geometries (Sections 12.4 "Patterns"), and (3) the use of pattern constraints to make regular polygons (12.5 "Regular Polygons"), (4) how a fixed geometry (a vertical line, which corresponds to claimed "boundary") and an unfixed geometry (a rectangle and a point) are solved when a modification of the geometry is received (see Section 2.5.6.2 "Weighted Standard Solving Mode", the associated Fig.4), and (5) maintaining the features on one side of a fixed line (see Section 2.4 "Chirality", especially pp.22-23; and sections 5.2 and 5.3).

The D-cubed reference and 2D DCM Manual are analogous art because they teach features of the same product.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the teachings of the D-cubed reference and 2D DCM Manual because they teach features of the same product.

The suggestion/motivation for combining the references would have been that they teach features of the same product.

Therefore, it would have been obvious to a person of ordinary skill in the art to modify the D-cubed reference with 2D DCM Manual to obtain the invention as specified in Claim 1.

Neither the D-cubed reference nor the 2D DCM Manual, however, expressly teach the following limitations:

receiving an input for the pattern comprising a plurality of features enclosed within a boundary of a CAD geometry piece where a feature corresponds to a feature of the CAD geometry piece;

automatically maintaining continuous enclosure of the pattern within the boundary of the modified CAD geometry piece, including

KeyCAD, on the other hand, expressly teaches the use of a "Group" button, which "is used to consolidate a set of selected objects as one grouped object." (see p.1-14). "Notice in the previous example that the objects have individual boundary points when not grouped. After grouping the objects, they share the same boundary points." (see p.9-7). The KeyCAD reference therefore teaches the limitation of "*the pattern comprising a plurality of features enclosed within a boundary of a CAD geometry piece where a feature corresponds to a feature of the CAD geometry piece*" and "*automatically maintaining continuous enclosure of the pattern within the boundary of the modified CAD geometry piece.*"

The D-cubed reference, 2D DCM Manual, and KeyCAD are analogous art because they are from the same field of endeavor of CAD software.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify the teachings of D-cubed reference and 2D

DCM Manual with those of KeyCAD, because all address the problems of manipulating grouped objects.

The suggestion/motivation for combining the references would have been KeyCAD's teachings of grouping and ungrouping objects (see p.9-7).

Therefore, it would have been obvious to a person of ordinary skill in the art to modify D-cubed reference and 2D DCM Manual with KeyCAD to obtain the invention as specified in Claim 1.

8. Dependent claims 2-9, 11, and 34-35 are rejected on the same grounds as independent claim 1.
9. Claims in claim set 2 (claims 12-13, 15-22, and 36-37) and claim set 3 (claims 23-33 and 38-39) are rejected based on the same reasoning as the claims in claim set 1 (claims 1-9, 11, and 34-35). Claim set 2 consists of apparatus claims, and claim set 3 consists of article of manufacture claims that recite limitations equivalent to those recited in the method claims of claim set 1, and which are taught throughout the D-cubed web site.

Response to Arguments

Affidavit in Reply to Requirement for Information Under 37 CFR § 1.105

10. In light of paragraphs 5, 6, 7, and 8 of the affidavit filed 11/15/07, and because the Examiner assumes that applicants' statements are truthful and made in good faith, the Examiner finds that the Requirement for Information under 37 CFR § 1.105 has been satisfied.

Claim Rejections - 35 USC § 102(b) – On Sale Bar

11. In light of paragraphs 5, 6, 7, and 8 of the affidavit filed 11/15/07, and because the Examiner assumes that applicants' statements are truthful and made in good faith, the examiner is withdrawing the 35 USC § 102(b) "on sale bar" rejections.

Claim Rejections - 35 USC § 102(a) – Prior Art

12. The examiner has found applicants arguments in the response filed 11/15/07, (see p.14), and has withdrawn all 35 USC § 102(a) rejections based on the 2D DCM Manual.

Claim Rejections - 35 USC § 102 (b) – Prior Art

13. The previously applied 35 USC § 102(b) rejections based on the D-cubed reference have been withdrawn, because even though the D-cubed reference expressly teaches the following:

To modify a model, the end-user simply specifies a change to the rules, such as a modified value for a dimension. The DCM then automatically recalculates the locations of all the geometries affected by the new dimension value, whilst ensuring that their final locations are consistent with the previously applied dimensions and constraints.

it does not expressly teach the claimed limitations "the pattern comprising a plurality of features enclosed within a boundary of a CAD geometry piece" and "automatically maintaining enclosure of a pattern within a boundary of a modified CAD geometry piece."

14. The 35 USC § 102(b) rejection has been replaced with 35 USC § 103(a) rejections.

Conclusion

15. The following prior art, made of record and not relied upon, is considered pertinent to applicant's disclosure.
16. The IEEE 100 dictionary, on p.224, defines "constraint" as "Limits on the ranges of variables or system parameters because of physical or system requirements." This definition of constraint matches the broadest reasonable interpretation of the term "constraint."
17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will

the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ayal I. Sharon whose telephone number is (571) 272-3714. The examiner can normally be reached on Monday through Thursday, and the first Friday of a bi-week, 8:30 am – 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached at (571) 272-3753.

Any response to this office action should be faxed to (571) 273-8300, or mailed to:

USPTO
P.O. Box 1450
Alexandria, VA 22313-1450

or hand carried to:

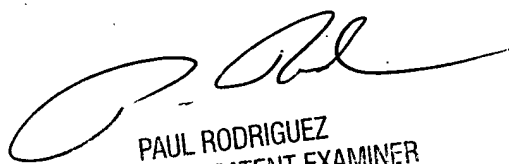
USPTO
Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Tech Center 2100 Receptionist, whose telephone number is (571) 272-2100.

Ayal I. Sharon
Art Unit 2123
January 10, 2008



PAUL RODRIGUEZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100